

Marks et al.  
May 12, 2004

Page 2

In the Claims:

Please cancel claim 4. Please amend claims 21 and 28. A detailed listing of the claims is provided, below.

1. (Original) A method of using silyl chemistry to control the reactivity of a self-assembled molecular electro-optic material, said method comprising:
    - providing an electro-optic material comprising a silyl-derivatized chromophore;
    - desilylating said chromophore compound to generate terminal hydroxy functionalities; and
    - reacting said hydroxy functionalities with a reagent having at least one silicon moiety.
  2. (Original) The method of Claim 1 wherein said chromophore is a high- $\beta$  chromophore.
  3. (Original) The method of Claim 1 wherein said chromophore is derivatized with a trialkylsilyl protecting group.
  4. (Canceled)
  5. (Original) The method of Claim 1 wherein said chromophore is desilylated by treatment with a deprotecting agent.
  6. (Original) The method of Claim 1 wherein said chromophore is derivatized with a *tert*-butyldimethylsilyl protecting group.
  7. (Original) The method of Claim 6 wherein said chromophore compound is desilylated with a quaternary ammonium fluoride.
- Claims 8-20 (canceled).
21. (Currently Amended) A non-linear optical material comprising a plurality of molecular bilayers, each said bilayer comprising a first chromophore molecular layer coupled to a capping molecular layer with a siloxane bond

Marks et al.  
May 12, 2004

Page 3

sequence, said capping compound molecular layer capable of coupling directly coupled to another chromophore molecular layer with a siloxane bond sequence.

22. (Original) The material of Claim 21 wherein said chromophore is a high- $\beta$  chromophore.

23. (Original) The material of Claim 21 wherein said capping layer is a polysiloxane.

24. (Original) The material of Claim 23 wherein said capping layer comprises octachlorosiloxane.

25. (Original) The material of Claim 21 wherein said bilayers are deposited on a substrate.

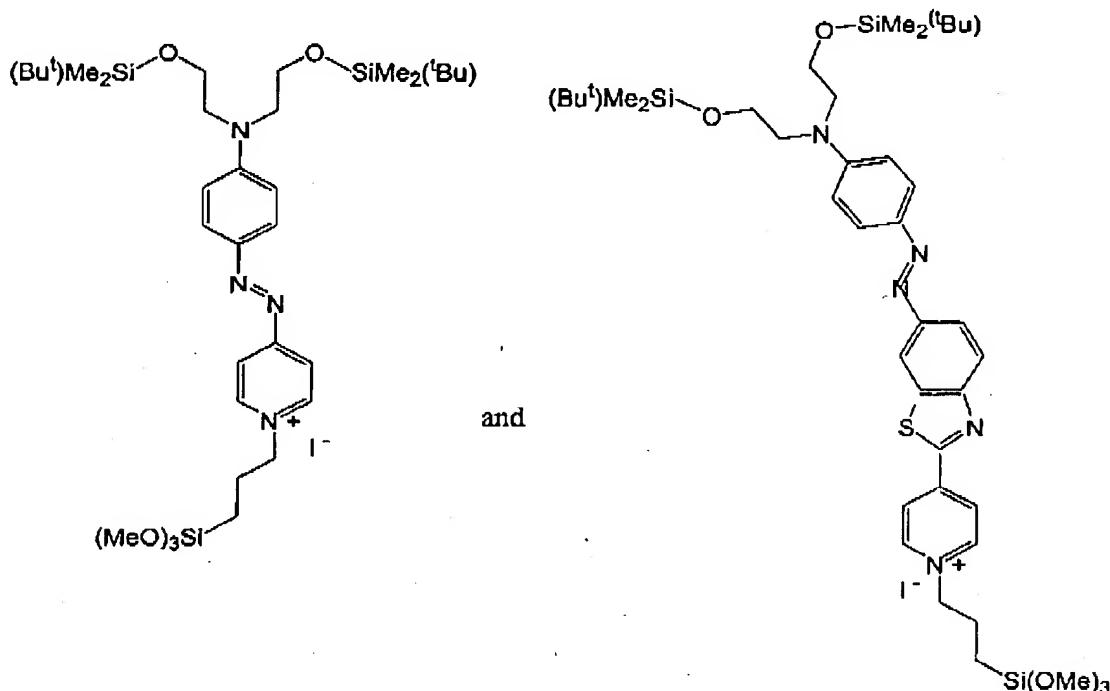
26. (Original) The material of Claim 25 wherein said substrate and said bilayers are incorporated into a waveguide device.

27. (Previously Amended) A chromophore composition with non-linear optical properties having the structural formula (Ch) $XR_n$ , wherein (Ch) $X$  comprises a pyridinium chromophore substructure and  $X$  is a heteroatom;  $R$  is a trialkylsiloxyalkyl moiety; and  $n$  is the number of said moieties meeting the valence requirement of said heteroatom.

28. (Currently Amended) The composition of Claim 27 wherein said chromophore is selected from the group consisting of structural formulae shown in FIGS. 2, 11 and 15,

Marks et al.  
May 12, 2004

Page 4



29. (Original) The composition of Claim 27 where in X is selected from the group of heteroatoms consisting of O and N.
30. (Original) The composition of Claim 29 wherein X is N and n is 2.
31. (Original) The composition of Claim 27 comprising a non-linear optical film.